

# THE IHS PRIMARY CARE PROVIDER



September 1995

Volume 20, Number 9

## IHS Links Providers to the Information Superhighway

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*Dr. Lane shook her head as she hung up the phone. Each infectious disease and oncology specialist she consulted offered a different suggestion for how she should treat her AIDS patient who was suffering from recurrent cervical dysplasia. Unsure about which treatment plan to choose, she turned to her PC, clicked on the Grateful Med icon, entered a few subject words, and, moments later, thanks to the new MEDLINE internet access, received multiple journal abstracts that provided her with the latest medical information regarding her patient's problem.*

*Dr. Lane then clicked on her Netscape icon to access the World Wide Web (WWW) and navigated to the National Cancer Institute's Clinical Oncology Program. There she found the latest experimental treatment protocols for cancer and AIDS and an experimental treatment protocol under which her patient could potentially be eligible to receive newly developed drug therapy. She then got onto the Internet to send an e-mail message to the director of that Tufts Medical School research group to determine if her patient could be included in their study.*

*Although she was in an isolated location treating a patient with an unusual medical profile, she now felt confident in her ability to develop a treatment plan that would give her patient the most modern, research-supported care possible.*

Dr. Lane's experience will be a common one for Indian Health Service health care providers who will soon be able to rapidly access a world of information, knowledge, and data. This capability is being made possible by a component of the Information Portal Project (IPP) known as the

"provider workstation." A workstation is a personal computer (PC) that supports the work efforts of a specific group of users (e.g., health care providers). Before describing the provider workstation in more depth, let's first discuss the IPP.

### IPP Overview

The IPP is a joint project between the Information Systems Division (ISD) of the Indian Health Service (IHS) Office of Health Program Research and Development (OHPRD), in Tucson, AZ, and the IHS Office of Information and Resource Management (OIRM). The IPP employs modern computing and communications technology to provide a central point of integration for local and remote data sources, audio and video information, and access to software applications. Figure 1 depicts the primary project objective: to place the health care provider at the center of a wealth of information resources with access through the workstation (conveniently located at the worksite) to all of the tools necessary for day-to-day work.

This article focuses on the workstation component of the IPP and will explore:

1. Provider needs that will be met by the workstation.
2. System features.
3. Plans for the future.

### Addressing Provider Needs

Providers practicing in rural areas have limited access to medical literature, may experience personal and professional isolation, and require access to office automa-

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Figure 1. IPP components: telemedicine and the four major categories of workstation applications.



tion products, such as a spreadsheet, word processor, and a software tool that can aid in the creation of overhead transparencies and slides for presentations. To address these needs, the ISD is installing provider workstations at several IHS facilities. These computer systems will significantly improve the information and communication resources available to providers.

At the end of 1994, San Xavier, Arizona, became the initial test site for the workstation. In August 1995, the Quentin N. Burdick Comprehensive Health Care Facility in Belcourt, North Dakota became the first site outside the Tucson Program Area to receive the provider workstation. Additional test sites that will receive the workstation during the next several months include the Alaska Native Medical Center in Anchorage; and the PHS Indian Hospitals in Santa Fe, and Albuquerque, New Mexico; Crow Agency, Montana; and Cherokee, North Carolina.

## System Features

The software applications that appear on the workstation fall within four categories:

- 1 Knowledge base applications.
- 2 Communications applications.
- 3 Patient data.
- 4 Personal productivity applications.

Figure 2 is a screen capture of a provider workstation depicting the software applications and the categories under which they fall. A health care provider clicks on an icon to access an application.

The software applications within each of the four categories are as follows:

### 1. Patient Data

- *Resource and Patient Management System Software.* As you can see in Figure 2 (in this example from the Sells Hospital and San Xavier Clinic computer systems), you can connect with your facility's Resource and Patient Management System (RPMS). This is where you go to access health summaries, the Case Management System, QMAN, and other RPMS and Patient Care Component (PCC) applications.
- *IHS Chart.* This application is for demonstration purposes only. The software demonstrates a new graphical user interface (GUI) for RPMS. The interface is a Microsoft Windows-based environment where the provider selects different patient data to be displayed in multiple windows simultaneously.

### 2. Knowledge Base

- *Grateful Med.* Grateful Med gives access to the MEDLINE database at the National Library of Medicine via a high-speed Internet connection. MEDLINE is an index of over seven million articles from over 3800 biomedical journals. You may receive reference information and abstracts, but not articles. To receive a copy of an article (if your facility lacks a library or librarian), providers

should try calling the nearest university medical library, your state medical association, or the National Library of Medicine (800-272-4787) to find out how to access journal literature within your region. Most libraries charge a fee for the retrieval of journal articles.

- **Netscape.** Netscape is a tool that allows you to navigate the Internet's World Wide Web (WWW). The WWW is a network of over eight million multimedia documents, including complete medical textbooks. Many medical, dental, nursing, and pharmacy schools have sites on the Web. In addition, almost any topic (for example, flyfishing, ski reports, movie reviews, etc.) is available on the Web. Figure 3 shows part of the Health Care Provider page from the IHS' WWW document. By clicking on any of the underlined options in Figure 3, a provider can navigate (i.e., be immediately transported) to any of the listed locations. If you clicked on "The Virtual Medical Center" option, you would be transported to a WWW site that would make available to you the items listed in Figure 4. Each of the items in Figure 4 would then provide you access to thousands of other items. You could spend years navigating the Web and never go to the same site twice!
- **University of Arizona (U of A) Library.** The U of A Library icon (Figure 2) is representative of a connection to a medical school library that may be available to you in your region of the country. Some hospital and university medical libraries provide electronic services to other medical facilities. Some of these services may include the ability to look up medical texts, access CD-ROMS, or access a university medical center's e-mail system.
- **CD-ROMS.**
  - a Scientific American Medical

Figure 2. Screen capture from a provider workstation. (The software application category labels on the left were added to this figure, e.g., Communications, Knowledge Bases, etc.)

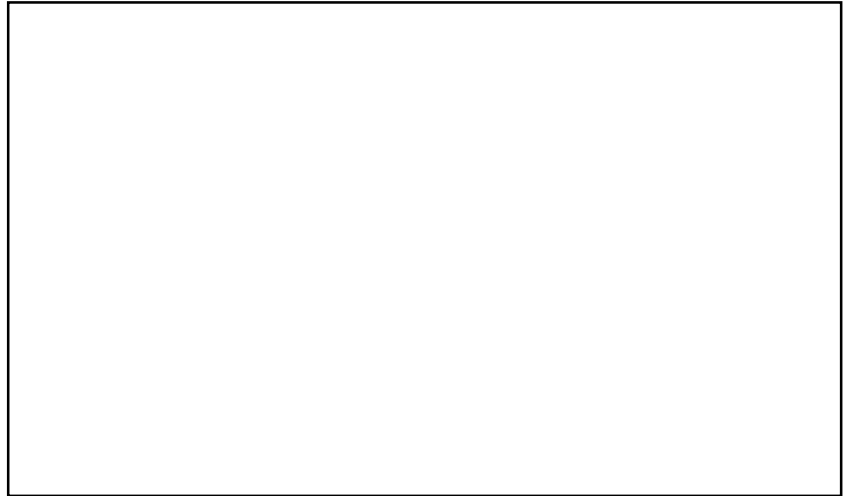


Figure 3. A "page" from the IHS World Wide Web document.

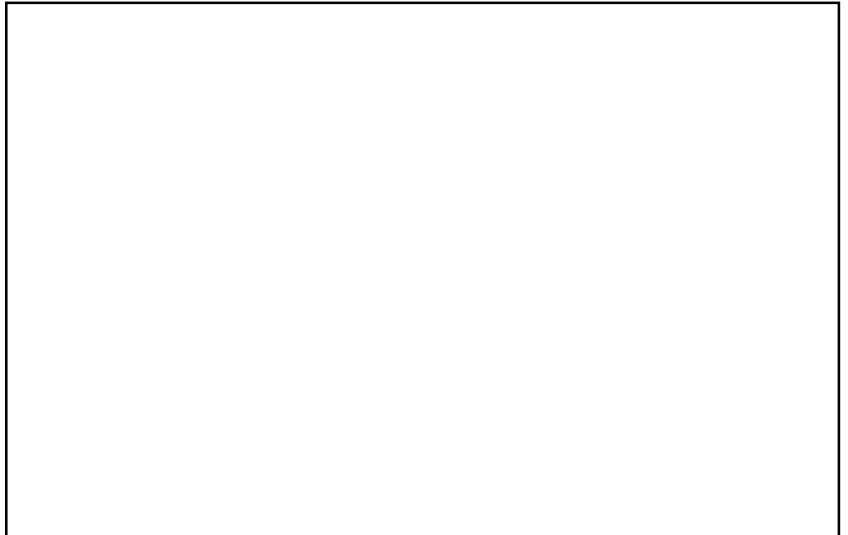
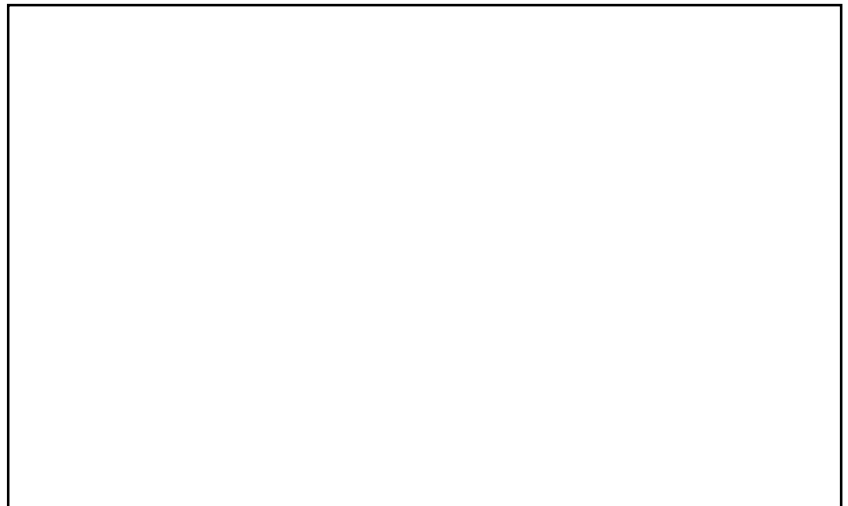


Figure 4. After clicking on the underlined Virtual Medical Center option in Figure 3, you navigate to the Virtual Medical Center Web document. This figure displays a small portion of the Virtual Medical Center.



(SAM). This is an on-line copy of the loose-leaf version of SAM. It contains a collection of comprehensive articles describing principles of diagnosis and therapy.

- b Little Brown's Books. This CD-ROM is also called MAXX: Maximum Access to Diagnosis and Therapy. The CD-ROM contains the complete text, tables, figures, and illustrations of more than 20 medical books published by Little, Brown and Company, along with an added volume of drug information.
- c American Family Physician. The Journal of the American Academy of Family Physicians, from 1989-1994, is on this CD-ROM. There are also over 60 patient information handouts.

### 3. Communications

- *IHS MailMan*. This is the national IHS electronic mail (e-mail) system. MailMan is the main form of e-mail used by employees working at IHS clinics and hospitals.
- *Internet Mail*. The Internet is a global network of distributed computer networks. That means that it is a network of linked systems that form the largest piece of what many people call the "Information Highway," "Cyberspace," or the "Net." You may use the Internet mail system to communicate with any of the millions of people worldwide who are users of the Internet.
- *ProShare*. ProShare software is a document conferencing program that presents a shared workspace for two computers which are connected by a modem or network. You and another person can simultaneously view and mark up documents in the ProShare application's workspace while talking with each other over the phone. ISD plans to use ProShare

Figure 5. This is the opening screen after IHS Chart is selected. A health care provider is presented with any outstanding orders that need completion and notification of unread lab and diagnostic test results.

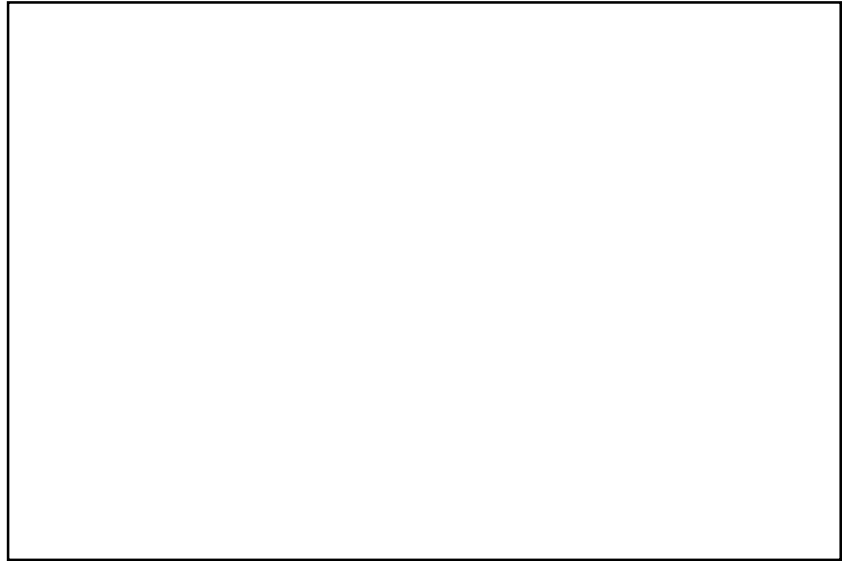
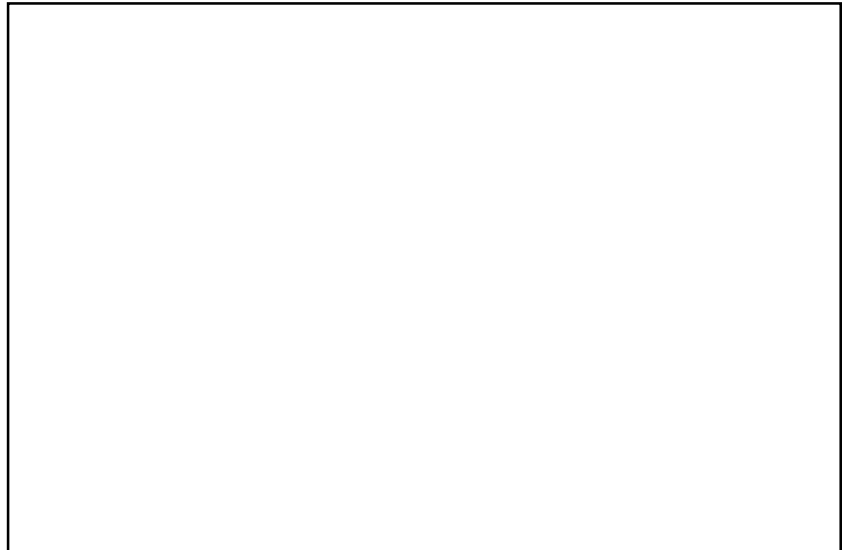


Figure 6. This is a display of patient Sam L. Bondurant's (fictitious) clinical data. Each of the items at the very bottom of the figure can be selected by the provider to obtain either more information about this patient or a presentation of information on the current screen in greater detail, such as lab test results graphed over time.



to work one-on-one with users of the provider workstation who want to learn more about how to use specific software applications.

- *Banyan Mail*. Banyan mail is an electronic mail system that is used by IHS Headquarters and Area Office personnel.
- *Crosstalk*. Crosstalk is an example of software that allows you to use a modem to connect with outside bulletin boards such as Prodigy and America Online, or to other computer systems.

### 4. Personal Productivity Software

- *Microsoft Word or WordPerfect*. One of these word processor

applications will be available to you at your work area.

- *Microsoft Powerpoint*. Powerpoint is an extremely useful software product. You can use it to easily and rapidly create:
  - a professional looking color or black and white overhead transparencies.
  - b 35mm slides.
  - c computer-based slide shows.
  - d audience handouts of your overheads.
  - e speaker notes that you can use during your presentation.
- *Microsoft Excel*. Excel is a spreadsheet that can be used to keep track of budgets and resource allocations. Excel's functionality is similar to that of Lotus.
- *File Manager*. File Manager is a Windows tool that helps you organize your DOS files and directories. You can use File Manager to copy files to a floppy disk, delete files, or move files from one location to another.
- *Workstation Help*. This on-line help system will give you the information and instruction you need to start exploring the different software applications on the workstation. In addition, detailed on-line help systems are available for most applications.

## Future Plans

An evaluation plan for the health care provider workstation has been written. The evaluation will determine the most and least useful aspects of the provider workstation. Suggestions from test site providers will be solicited for enhancements they would like to see made to the

system. The feedback that ISD receives from health care providers at these test sites will be used in the design of the provider workstation that will be released in a general distribution to other IHS facilities.

There will also be a shift from the roll and scroll presentation of RPMS software to a new graphic user interface that makes use of the Windows environment. The IHS Chart application described earlier in this article is a demonstration of the new user interface (see Figure 5). Providers will be able to have full window views of patient data (see Figure 6). More than one window can be open at a time and the data in one window need not relate to data in another window. You may have lab data in one window, pharmacy data in another, and demographic data in a third window. Data can be exported from those windows into any software application that supports the importation of data. Examples of those kinds of software include spreadsheets such as Excel and Lotus, and word processors like Word and WordPerfect. The provider will have much greater control over what gets displayed and in what detail the patient data is displayed. Data can be graphed (previous lab values, for example, can be compared to current lab values at a glance), and a summary of the displayed data can be generated.

The future holds exciting changes for users of IHS Information Systems. Our goal is to provide a world-class, quality health information system so that health care providers throughout the IHS can be supported in providing the highest quality health care possible for their patients. Suggestions for how to improve our information systems are always welcome; please contact us at the Information Systems Division, OHPRD, 7900 South J. Stock Road, Tucson, Arizona 85746, Att: Special Projects Group. If you have any questions about the provider workstation, either write to the above address or send e-mail to Dr. David Grau at [dgrau@tucson.ihs.gov](mailto:dgrau@tucson.ihs.gov) or via Banyan or IHS MailMan. ■

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## SPECIAL ANNOUNCEMENT ①

# Free Publication and Database Searches on Minority Health Topics

Publications and database searches on minority health topics are available free from the Office of Minority Health Resource Center (OMH-RC), a nationwide service of the Office of Minority Health, U.S. Department of Health and Human Services. The center operates a toll-free line and maintains a computer database of information on books, programs, and organizations. Additionally, OMH-RC maintains subject files of articles on many topics, ranging from

cancer to diabetes. All materials are mailed out at no charge to the caller. The center collects and distributes health information on African Americans, American Indians/Alaska Natives, Asian Americans, Hispanics/Latinos, and Pacific Islanders. To speak with an information specialist, call 800-444-6472, Monday through Friday, 9 a.m. to 5 p.m., Eastern Time. (TDD: 301-589-0951; fax: 301-589-0884). ■



# Weight Gain in Pregnancy: Clinical Implications for Navajo Women

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## Background

The relationship between food consumption, weight gain, maternal well-being, and infant birth outcome has been the focus of intense debate for many decades. In the nineteenth century, pregnant women were advised to limit food intake so that the possibility of a long and obstructed labor associated with a large baby would be reduced. By 1930, excessive weight gain was seen as the principal cause of toxemia and women were advised to limit total weight gain to less than 15 pounds to avoid preeclampsia. Currently, the issue of weight gain during pregnancy revolves around maternal nutritional status, fetal growth, and fetal well-being.<sup>1</sup>

Pregnant Navajo women receive advice from family members, friends, and medical providers regarding the amount of weight they should gain. As a consequence, the advice Navajo women receive is usually based upon a combination of traditional beliefs and current obstetrical standards of practice. Reference data for prenatal weight gain patterns in Navajo women are not available. Therefore, the Departments of Obstetrics and Gynecology and Nutrition at the Northern Navajo Medical Center initiated a study to develop prenatal weight gain reference data which could be used by providers to aid nutritional counseling during pregnancy.

## Methods

All patients included in this study met the following criteria: (1) they were full-quantum Navajos, (2) they received the majority of their care at Northern Navajo Medical Center, (3) they had an initial prenatal visit before 20 weeks, (4) their body weight was recorded at least once within the period from six months prior to their last menstrual period through the end of the first trimester, (5) they had at least 6 prenatal visits, and (6) they delivered a singleton fetus at term (at least 37 weeks gestation). Body weight was obtained with the patient dressed in indoor clothing without shoes using a properly calibrated clinical scale. The patient's height was measured without shoes.

Initial screening information was obtained from the birth log and detailed information was obtained from the medical record. A review of the records of the 659 patients who delivered at the Northern Navajo Medical Center between April 1, 1993 and February 1, 1994 resulted in a sample size of 134 patients who met the criteria for inclu-

sion in this study. Many patients were excluded from the study because their prepregnancy weight was not documented, as required by the fourth criterion. Of the 659 patients who delivered, approximately 8% were Type A1 gestational diabetics.

Data were analyzed<sup>2</sup> using analysis of variance (ANOVA), and descriptive statistical techniques. A Bonferroni 95% confidence interval to control the Type 1 error rate for mean differences was computed for each univariate result. Mean differences were considered significant if the probability value under the null hypothesis was less than one chance in twenty. Table 1 shows the classification system used to assign women to prepregnancy body mass index (BMI) groups and the currently recommended weight gain ranges for each BMI group.<sup>3,4</sup> Of the 134 patients in the sample, 2 were underweight. Therefore, the underweight BMI group was not included in the analysis. Table 2 shows the classification system used to assign women to age, total weight gain, parity, and infant birth weight groups.

## Results

Women with Type A1 gestational diabetes were not significantly different from other women in the sample with respect to total weight gain ( $t$ -test=.63,  $df$ =132,  $P$  value=.6) or infant weight at delivery ( $t$ -test=.05,  $df$ =130,  $P$  value=.8). Therefore, Type A1 gestational diabetics were not analyzed separately. Approximately 16% of the women in this study were under 20 years of age, 73% were between 20 and 35, and 11% were over 35 years old. Patients ranged in age from 15 to 41 years.

Table 3 shows the results of sorting maternal weight gain by prepregnancy BMI group. As prepregnancy BMI increased, the percent of women who gained excessive weight in pregnancy increased. Normal and overweight women were twice as likely to gain a recommended amount compared to obese women. As prepregnancy BMI decreased, the percent of women who gained less than the recommended weight gain increased. Approximately 78% of the obese women gained too much weight and about 22% gained the recommended amount. In this study, only 38% of normal weight patients, 42% of the overweight, and 22% of the obese patients had weight gains consistent with the current Institute of Medicine's (IOM) 1990 guidelines (Table 1). When all the women in this study were considered as a group, 35% conformed with IOM guidelines, 21% gained too little, and 44% gained too much.

Table 4 shows the outcome when the variables were sorted by maternal weight gain group: those who gained less than 10 lbs., those who gained 10 to 34 lbs., and those

Table 1. Prepregnancy body mass index group classification system.

BMI Group	Weight/Height Category	% Standard Weight	BMI*	Recommended Weight Gain (lbs.)
1	underweight	<90%	<19.8	28 to 40
2	normal	90 to 120%	⊕19.8 to 26.0	25 to 35
3	overweight	121 to 135%	⊕26.1 to 29.0	15 to 25
4	obese	>135%	⊕29.1	<15

\* BMI=body mass index = weight (in kilograms) divided by height (in meters)<sup>2</sup>.

Table 2. Age, total weight gain, parity, and infant birth weight group classification system.

Variable	Units	Group		
		1	2	3
Maternal age	Years	<20	⊕20 to <35	⊕35
Total weight gain	Pounds	<10	⊕10 to <35	⊕35
Parity	Live Births	< 2	2	> 2
Infant birth weight	Grams	<2500	⊕2500 to <4000	⊕4000

Table 3. Weight gain by body mass index group.

Variable	Prepregnancy BMI* Category		
	Normal (n†=58; %‡=44)	Overweight (n†=38; %‡=29)	Obese (n†=36; %‡=27)
Recommended weight gain range (lbs)	25 to 35	15 to 25	<15
Percent of patients gaining:			
excess weight	26	40	78
recommended weight	38	42	22
inadequate weight	36	18	0
Actual range of weight gain (lbs)	5 to 56	5 to 61	5 to 41

\* BMI = weight (in kilograms) divided by height (in meters)<sup>2</sup>.  
† Number of patients in category.  
‡ Percent of patients in category out of the total sample of 132 patients.

Table 4. Breakdown by maternal weight gain group.

Variable	Maternal Weight Gain (lbs)					
	Under 10 (n†=11; %‡=8)		10 to 34 (n†=98; %‡=74)		Over 35 (n†=23; %‡=18)	
	Mean	SEM†	Mean	SEM	Mean	SEM
BMI   prepregnancy	28.4	1.1	27.5	0.4	25.5	0.9
Weight prepregnancy	159	6.6	157	2.8	150	6.2
Age prepregnancy	29.3	2.0	26.1	0.6	24.3	1.4
Parity	3.0	0.6	2.0	0.2	1.3	0.4
Total maternal weight gain	7.1	0.6	23.6	0.7	41.1	1.4
Infant birth weight	3377	135	3486	46	3479	97

\* Number of patients in category.  
† Percent of patients in category out of the total sample of 132 patients.  
‡ SEM = standard error of mean.  
|| BMI = weight (in kilograms) divided by height (in meters)<sup>2</sup>.

who gained 35 or more lbs in pregnancy. About 8% of the women gained less than 10 pounds, 74% gained between 10 and 34 pounds, and 18% gained more than 35 pounds. The range of weight gain was between 5 and 61 pounds. As maternal weight gain group increases, there is a tendency for prepregnancy BMI, weight, and age to decrease.

Table 5 shows the breakdown when the variables were sorted by prepregnancy BMI group. The average prepregnancy BMI of all patients in this study was about 27.2, the range was between 19.9 and 43.2, and roughly 56% were overweight or obese. Normal and overweight patients had mean weight gains of 28.3 (95% CI: 25.6-31.0) and 22.8 (95% CI: 19.7-27.9) pounds respectively, well within accepted weight gain recommendations for these groups. However, about 27% of our patients were obese and these women had a mean weight gain of 23.2 (95% CI: 20.1-26.3) pounds which was higher than the recommended amount. For reference, in the general population approximately 10.8%<sup>5</sup> of the females are obese and the average BMI for a nonpregnant female over 18 years of age is 21.8.<sup>6</sup>

Table 6 shows the results of sorting the variables by parity group. At the time of the first prenatal visit, 47% of the women had experienced less than two live births, 23% had two live births, and 30% had over two live births. Parity ranged between 0 and 8 live births. Patients with higher parity tended to have the highest prepregnancy BMIs, be older, have lower prenatal weight gains, and to deliver the heaviest infants. These results suggest that with advancing age and parity prepregnancy BMI generally increases and weight gain in pregnancy decreases.

Table 7 shows the outcome when the variables were sorted by infant birth weight group. About 4% of the infants weighed less than 2500 grams, 84% weighed between 2500 and 4000 grams, and 12% weighed more than 4000 grams. The range of infant birth weights was between 2340 and 4790 grams. Mothers of macrosomic infants tended to have a higher prepregnancy BMI, be of higher parity, and gain more weight than mothers of normal weight infants.

ANOVA was used to determine if total weight gain varied by maternal age group, parity group, or prepregnancy BMI group. ANOVA results ( $F=3.38$ ;  $df=6,125$ ;  $P$  value=0.004) indicated that the average weight

**Table 5. Breakdown of variables by prepregnancy body mass index group.**

Variable	Pregpregnancy BMI Categ					
	Normal (n*=58; %=44)		Overweight (n=38; %=29)		Obese (n=36; %=27)	
	Mean	SEM†	Mean	SEM	Mean	SEM
BMI‡ prepregnancy	23.6	0.2	27.5	0.1	32.7	0.6
Weight prepregnancy	135	1.8	157	1.7	189	4.1
Age prepregnancy	24.9	0.8	27.5	1.0	26.5	0.9
Parity	1.5	0.2	2.1	0.3	2.3	0.4
Total maternal weight gain	28.3	1.4	22.8	1.6	23.2	1.6
Infant birthweight	3333	60	3624	62	3539	77

\* Number of patients in category.  
† Percent of patients in category out of the total sample of 132 patients.  
‡ SEM = standard error of mean.  
|| BMI = weight (in kilograms) divided by height (in meters)<sup>2</sup>.

**Table 6. Breakdown by parity group.**

Variable	Parity (Livebirths)					
	Under 2 (n*=62; %=47)		2 (n=30; %=23)		Over 2 (n=40; %=30)	
	Mean	SEM†	Mean	SEM	Mean	SEM
BMI‡ prepregnancy	26.5	0.5	27.5	0.8	28.2	0.8
Weight prepregnancy	152	3.1	158	5.1	161	5.1
Age prepregnancy	22.4	0.6	27.5	0.7	30.7	0.9
Parity	0.5	0.1	2.0	0.0	4.0	0.2
Total maternal weight gain	28.6	1.4	23.1	1.9	21.8	1.5
Infant birthweight	3380	55	3553	92	3564	66

\* Number of patients in category.  
† Percent of patients in category out of the total sample of 132 patients.  
‡ SEM = standard error of mean.  
|| BMI = weight (in kilograms) divided by height (in meters)<sup>2</sup>.

**Table 7. Breakdown by infant birth weight group.**

Variable	Infant BirthWeight (g)					
	Under 2500 (n*=5; %=4)		2500 to 4000 (n=111; %=84)		Over 4000 (n=16; %=12)	
	Mean	SEM†	Mean	SEM	Mean	SEM
BMI‡ prepregnancy	26.2	2.2	27.1	0.4	28.5	1.2
Weight prepregnancy	142	14.1	155	2.5	171	7.9
Age prepregnancy	23.4	2.4	26.1	0.6	26.5	1.4
Parity	1.2	0.4	1.9	0.2	2.6	0.5
Total maternal weight gain	25.3	5.6	24.8	1.0	29.0	3.3
Infant birthweight	2405	33	3402	33	4183	48

\* Number of patients in category.  
† Percent of patients in category out of the total sample of 132 patients.  
‡ SEM = standard error of mean.  
|| BMI = weight (in kilograms) divided by height (in meters)<sup>2</sup>.

gain was significantly different within age, parity, and BMI groups. The Bonferroni test results indicated that women under 20 years of age gained about 8 pounds more (95% CI: 0.1 to 16.7) than women over 35 years of age. Women who had fewer than two live births gained almost 6 pounds more (95% CI: 1 to 11) than women that had two or more live births. Women in the normal BMI group gained about 5 pounds more (95% CI: 0.4 to 10.7) than women in either the overweight or obese BMI groups. And infants born to women in the normal BMI group weighed about 290 grams less (95% CI: 70 to 512) than infants born to overweight women ( $F=5.6$ ;  $df=2,127$ ;  $P$  value=0.005).

Figure 1 shows the weight gain pattern for the different BMI groups. All groups exhibited very limited weight gain during the first trimester, and then they gained about one pound per week during the second and third trimesters. Women of normal weight started to gain about three weeks earlier than the overweight and obese women and they gained more weight throughout the prenatal period. Figure 1 also shows that the weight gain patterns of overweight and obese women were similar. The obese group exceeded their recommended weight gain of 15 pounds by the 34th prenatal week.

## Discussion

It is difficult to determine the ideal weight gain for an individual woman from research studies, but current guidelines for weight gain combined with individual assessment can provide the clinician with an appropriate plan.<sup>7</sup> Extremes in maternal weight gain contribute to intrauterine growth restriction (IUGR) and macrosomia. IUGR can lead to increased perinatal morbidity and mortality, and macrosomia is associated with dystocia and increased operative delivery.<sup>8</sup> Underweight women tend to have better perinatal outcome when they gain at least 37 pounds and obese women tend to have the best perinatal outcome when they gain less than 15 pounds.<sup>3</sup> Some studies indicate that obese patients may not need to gain any weight at all during pregnancy for a good outcome.<sup>9</sup> For normal weight women, estimated for the general population, the



Figure 1. Average weight change during pregnancy by prepregnancy body mass index group and prenatal week.



optimal weight gain is between 25 and 35 pounds.<sup>3</sup>

The pattern of weight gain is also important, and research in non-Indian populations has shown that most women gain under three pounds in the first trimester and about one pound per week during the second trimester.<sup>3</sup> In the third trimester the average women gains about nine-tenths of a pound per week.<sup>4</sup> An accelerated or restricted weight gain pattern may signal a significant change in maternal or fetal status related to nutritional intake, substance abuse, or intrauterine growth restriction. Though mean weight gains for our normal and overweight patients were acceptable, some patients in all three BMI groups exceeded the current 1990 IOM guidelines for weight gain. Results of this study indicate that normal and overweight Navajo prenatal patients had mean weight gains well within accepted weight gain recommendations for these groups. However, our obese patients had a mean weight gain well above the recommended limit of 15 pounds for this group.

Based upon the clinical observation that many patients were overweight or obese, we structured a program of nutritional counseling for prenatal patients. At the first prenatal visit the patients height, without shoes, was recorded and her prepregnancy weight was established. Patients were then assigned to a BMI group. Based on BMI, an ideal weight gain was identified for each patient and incorporated into an individualized, comprehensive nutritional plan. All new prenatal patients were encouraged to attend a weekly prenatal nutritional class. In addition, once per week the prenatal clinic was staffed by a nutritionist who was available for provider support and

patient counseling. Weight gain patterns were followed closely throughout pregnancy. Inadequate or excessive weight gain was discussed with the patient, and all patients with special nutritional needs during pregnancy were offered individual nutritional counseling. Reasons for referral to the nutritionist included either underweight or overweight prepregnancy BMI, inadequate or excessive prenatal weight gain, gestational diabetes, or other nutrition-related medical complications.

It is too early to tell if increased patient awareness of prenatal nutrition and weight gain has been successful in establishing more normative and recommended weight gain patterns in our patients. However, the IOM has recommended that when problems that benefit from special nutritional care are identified, the patient should be referred to a registered dietitian for appropriate counseling.<sup>10</sup> The results of this study show that some patients in all BMI groups gained an inappropriate amount during pregnancy. Therefore, prenatal patients in all BMI groups could benefit from counseling on ways to optimize nutrient intake and manage weight gain during pregnancy. If resources are limited, at least the obese patients should be targeted for nutritional counseling and weight control management during pregnancy.

### Future Directions

This study has helped to quantify weight gain patterns and associated clinical variables in pregnancy in Navajo women, and will provide a benchmark for evaluating future efforts to increase compliance with the 1990 Institute of Medicine's guidelines for weight gain. Our study looked

at one limited and short-term infant outcome: birth weight. However, the effect of excessive weight gain may not stop for mother or baby at delivery. Many women cite pregnancy as the onset, if not the cause of their subsequent obesity. Obesity in children may be related to weight gain patterns in their mothers. Therefore, proper nutritional and weight control advice to pregnant women may reduce future risks associated with overweight and obesity. Future investigations should include an evaluation of other, long term infant outcomes and maternal postpartum weight retention for different BMI groups.

Although pregnancy itself may be responsible for small residual weight gain, lifestyle and body image may encourage an even greater weight gain in the postpartum period.<sup>11</sup> Therefore, proper nutritional and weight control advice to pregnant women may reduce future risks associated with obesity for both mother and infant. We suggest that all prenatal providers familiarize themselves with the current recommendations for weight gain in pregnancy. Best outcomes can be achieved through successful adherence to these recommendations, individualization of patient goals, close monitoring of prenatal weight gain patterns, and close teamwork between prenatal providers and nutritional counselors. ■

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## SPECIAL ANNOUNCEMENTS ①

### 1996 Fellowship Opportunity

Based upon the magnitude of the injury problem in American Indians and Alaska Natives (AI/ANs), the Indian Health Service (IHS) has developed the Injury Prevention Specialist Fellowship to address the need for qualified personnel in the field of injury prevention. The Fellowship is a duty station-based course of study not requiring any permanent change of station. Participants leave their duty station for no more than five to six weeks to complete required course work. Each Fellow is required to complete a special research study related to some aspect of the injury problem among AI/ANs and present their findings at a national symposium held annually in Bethesda, Maryland.

Injuries pose one of the most significant public health problems facing the American Indian and Alaska Native people today. Annually, more than 1,300 AI/ANs die prematurely from trauma as the direct result of injuries. Each year, approximately 10,000 AI/ANs are hospitalized for trauma and spend as many as 50,000 days in IHS and contract care hospitals. It is estimated that more than \$125 million will be spent annually on transportation and treatment of injury victims; an estimate considered very con-

servative by many.

Persons interested in more information about the 1996 Fellowship opportunities, professional requirements, announcement, and application dates, should contact their Area Injury Control Officer (see box) or call Kelly M. Taylor, Sanitarian Consultant, Headquarters West (Albuquerque, NM) at 505-837-4258. ■

#### Area Injury Control Officers

Aberdeen Area	John Weaver	605-226-7451
Alaska Area	Ron Perkins	907-271-4700
Albuquerque Area	Jerry Lee	505-766-8092
Benidji Area	Bruce Etchison	218-759-3356
Billings Area	John Sery	406-247-7097
California Area	Byron P. Bailey	916-566-7001
Nashville Area	Jackie Moore	704-497-5030
Navajo Area	Nancy Bill	520-871-5852
Oklahoma City Area	Harold Gilly	405-945-6800
Phoenix Area	Alan Dellapenna	602-640-2046
Portland Area	Mickey Rathsan	503-326-2001
Tucson Area	Richard Sullivan	520-295-2580

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## Patient Education Materials For Native Americans Available

AIDS education materials written for Native Americans are available from the American Indian Health Care Association (AIHCA). The following brochures are available at a cost of 5¢ a piece, unless otherwise indicated: "Will Kissing a Mosquito Give You AIDS . . . ."; "Should You Get the HIV Antibody Test?" (limited quantities available); "When a Native American Person is Told . . . ."; "Are You Wondering How to Get Your Partner To Use a Condom?"; "How to Talk to Your Kids About AIDS and STDs"; "Why Should I Be Concerned About AIDS Just Because I Have a Drink Once In Awhile?"; and "Take

Control" (7¢ each). Posters, available for \$5 each, include "AIDS Is Not a Quick Kill"; "You Can't Get AIDS By. . . You Can Get AIDS By. . . ."; "No Matter What Path You Walk. . . ."; and "Let the Light of Our Teaching . . . ." Coloring books are also available at a cost of 75¢ each or \$67.50 for a box of 115.

To obtain these materials, contact Michelle Paisano-Schwebach, 1999 Broadway, Suite 2530, Denver, Colorado (phone: 303-295-3757 or 800-473-1926). (This is a new address; the AIHCA has moved since this notice was printed in the July 1995 issue of *The Provider*.) ■

## Call for Memorabilia

1995 marks the fortieth anniversary of the establishment of the Indian Health Service (IHS). To commemorate this milestone, we are requesting that any interested individual (either currently employed by or retired from the Indian Health Service or a tribal health program, or others who are providing or have provided health care to American Indians and Alaska Natives) send relevant memorabilia that depict important people, places, or events throughout this forty year span. Please send photographs, old documents, signs, or any other item(s) that you feel would be of interest. Currently, plans are to photograph these items for a 'visual history.'

In addition, these items pertaining to the history of the Agency will be displayed during the annual meeting of Service Unit Directors and Clinical Directors scheduled for January 8-12, 1996, in Scottsdale, Arizona, after which items will be returned to their owners.

Memorabilia should be sent no later than December 1, 1995 to Dr. E.Y. Hooper, IHS Clinical Support Center (CSC), 1616 East Indian School Road, Suite 375, Phoenix, Arizona 85016 (phone: 602-640-2140). Although every effort will be taken to safeguard the items, the CSC cannot be responsible for loss or damage. ■

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## MEETINGS OF INTEREST ①

### National Councils of SUDs and CDs January 8-12, 1996 Scottsdale, Arizona

The Indian Health Service National Councils of Service Unit Directors (SUDs) and Clinical Directors (CDs) will meet in Scottsdale, Arizona January 8-12, 1996. The theme of the meeting is "The Indian Health Service: Forty Years of Service." More information can be obtained from Dr. E.Y. Hooper, IHS Clinical Support Center, 1616 East Indian School Road, Suite 375, Phoenix, AZ 85016 (phone: 602-640-2140).

### IHS Respiratory Therapists November 16-17, 1995 Phoenix, AZ

The third annual meeting of the Indian Health Service Respiratory Therapy Practitioners will be held at the Phoenix Indian Medical Center, 4212 North 16th Street, Phoenix, Arizona 85016. Topics on the agenda include AIDS/HIV, Hantavirus Update, Non-Invasive Ventilation Techniques, RSV Update, Latest Respiratory Therapy Homecare Devices, Stress Management, PL 638 Legislation and What It Means to You, and more. CEUs applied for through AARC. For more information, contact Leo Hernandez at 602-263-1565 or 602-263-1200. ■

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*The Provider* is published monthly by the Indian Health Service Clinical Support Center (CSC). Telephone: (602) 640-2140; Fax: (602) 640-2138. The Clinical Support Center's home page and copies of *The Provider* can be found on the Internet at [provide@IHS.SSW.DHHS.GOV](mailto:provide@IHS.SSW.DHHS.GOV)

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**Opinions expressed in articles are those of the authors and do not necessarily reflect those of the Indian Health Service or the Editors.**

**Circulation:** *The Provider* (ISSN 1063-4398) is distributed to more than 6000 health care providers working for IHS and tribal health programs, to medical and nursing schools throughout the country, and to health professionals working with or interested in American Indian and Alaska Native health care. If you would like to receive *The Provider*, free of charge, send your name, address, professional title, and place of employment to the address listed below.

**Publication of articles:** Manuscripts, comments, and letters to the editor are welcome. Items submitted for publication should be no longer than 3000 words in length, typed, double-spaced, and conform to manuscript standards. IBM-compatible word processor files are preferred.

Authors should submit at least one hard copy with each electronic copy. Manuscripts may be received via the IHS Banyan electronic mail system. References should be included. All manuscripts are subject to editorial and peer review. Responsibility for obtaining permission from appropriate Tribal authorities/Area Publications Committees to publish manuscripts rests with the author. For those who would like some guidance with manuscripts, a packet entitled "Information for Authors" is available by contacting the CSC at the address below.

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